CLAIMS:

1. A processing element for affecting a chemical process in a semiconductor manufacturing system, comprising:

a passive component configured to be coupled to said semiconductor manufacturing system and configured to erode when exposed to said chemical process in said semiconductor manufacturing system; and

an active component coupled to said passive component and configured to alter said chemical process when exposed to said chemical process.

2. The processing element as recited in claim 1, wherein said active component is embedded within said passive component.

3. The processing element as recited in claim 1, wherein said active component comprises at least one of a solid material and a liquid material.

4. The processing element as recited in claim 1, wherein said active component comprises an organo-metallic compound.

5. The processing element as recited in claim 4, wherein said organo-metallic compound comprises at least one of yttrium, aluminum, iron, titanium, zirconium, and hafnium.

6. The processing element as recited in claim 4, wherein said organo-metallic compound comprises at least one of yttrium tris hexafluoroacetylacetonate, yttrium tris(2,2,6,6-hexamethyl)-3,5-heptanedionate, yttrium tris diphenylacetylacetonate, 1,2-diferrocenylethane, aluminum tris(2,2,6,6- tetramethyl)-3-5-heptanedionate, aluminum lactate,

aluminum-8- hydroxyquinoline, bis(cyclopentadienyl)titanium pentasulfide, bis(pentamethylcyclopentadienyl) hafnium dichloride, zirconium acetylacetonate, zirconium tetra(2,26,6-tetramethyl)-3,5-pentanedionate, zirconium tetra(1,5-diphenylpentane-2-4-dione), ferrocene aldehyde, ferrocene methanol, ferrocene ethanol, ferrocene carboxylic acid, ferrocene dicarboxylic acid, 1,2 diferrocene ethane, 1,3 diferrocene propane, 1,4 diferrocene butane and decamethylferrocene.

7. The processing element as recited in claim 1, wherein said active component comprises an ultraviolet (UV) absorber.

8. The processing element as recited in claim 7, wherein said UV absorber comprises at least one of benzophenone, benzotriazole, and hindered amine stabilizers (HALS).

9. The processing element as recited in claim 1, wherein said active component comprises an antioxidant.

10. The processing element as recited in claim 9, wherein said antioxidant comprises at least one of hindered phenols, aromatic amines, organophosphorous compounds, thiosynergists, hydroxylamine, lactones, and acrylated bis-phenols.

11. The processing element as recited in claim 1, wherein said active component comprises a distribution of solid particles encapsulated within said passive component.

12. The processing element as recited in claim 11, wherein said distribution of solid particles within said passive component comprises

variations in at least one of a particle size, a particle composition, and a particle concentration.

13. The processing element as recited in claim 1, wherein said processing element is configured to be temperature controlled in order to alter a rate at which said active component is exposed to said chemical process.

14. The processing element as recited in claim 1, wherein said processing element is configured geometrically to affect a rate at which said active component is exposed to said chemical process.

15. The processing element as recited in claim 1, wherein said processing element is cylindrical, and an inner surface of said processing element comprises,

a groove structure formed thereon and configured to expose a substantially constant surface area of said inner surface as said inner surface recedes during erosion by said chemical process.

16. The processing element as recited in claim 1, wherein said passive component comprises at least one of a polymer, a porous polymer, a foam, and a gel.

17. The processing element as recited in claim 16, wherein said polymer comprises at least one of Kapton and polyimide.

18. A semiconductor manufacturing system for processing a substrate using a chemical process, comprising:

a processing chamber configured to facilitate said chemical process;

a substrate holder coupled to said processing chamber and configured to support said substrate;

a gas distribution system coupled to said processing chamber and configured to introduce a process gas to said processing chamber;

a plasma source coupled to said processing chamber and configured to generate a plasma in said processing chamber;

at least one processing element coupled to at least one of said processing chamber, said substrate holder, said gas distribution system, and said plasma source; and

said at least one processing element comprising,

a passive component configured to erode when exposed to said chemical process in said semiconductor manufacturing system, and

an active component coupled to said passive component and configured to alter said chemical process when exposed to said chemical process.

19. The semiconductor manufacturing system as recited in claim 18, wherein said active component is embedded within said passive component.

20. The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises at least one of a solid material and a liquid material.

21. The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises at least one of an organo-metallic compound, an ultraviolet absorber, and an antioxidant.

22. The semiconductor manufacturing system as recited in claim 18, wherein said active component comprises a distribution of solid particles encapsulated within said passive component.

23. The semiconductor manufacturing system as recited in claim 22, wherein said distribution of solid particles within said passive component comprises varieties in at least one of a particle size, a particle composition, and a particle concentration.

24. The semiconductor manufacturing system as recited in claim 18, wherein said processing element is configured to be temperature controlled in order to alter a rate at which said active component is exposed to said chemical process.

25. The semiconductor manufacturing system as recited in claim 18, wherein said at least one processing element is configured geometrically to affect a rate at which said active component is exposed to said chemical process.

26. The semiconductor manufacturing system as recited in claim 18, wherein said passive component comprises at least one of a polymer, a porous polymer, a foam, and a gel.

27. A method of utilizing a processing element to affect a chemical process in a semiconductor manufacturing system, comprising:

installing at least one processing element in said semiconductor manufacturing system, said at least one processing element comprising a passive component configured to be coupled to said semiconductor

manufacturing system and an active component coupled to said passive component;

exposing said at least one processing element to said chemical process in order to facilitate erosion of said passive element; and

introducing said active component during said erosion of said passive component in order to alter the chemistry of said chemical process when exposed to said chemical process.

28. The method as recited in claim 27, further comprising:

monitoring said erosion of said passive component.

29. The method as recited in claim 28, wherein said monitoring is performed using at least one of measuring a light intensity emitted from said chemical process, measuring a thickness of said at least one processing element, and measuring a voltage in said semiconductor manufacturing.

30. The method as recited in claim 29, wherein said monitoring comprises measuring said light intensity using optical emission spectroscopy.

31. The method as recited in claim 29, wherein said monitoring comprises measuring said thickness using an ultrasonic sensor.

32. The method as recited in claim 29, wherein said monitoring comprises measuring said voltage using a voltage probe.

33. The method as recited in claim 27, further comprising:

controlling said introduction of said active component by performing at least one of varying a distribution of at least one of a size, composition, and a concentration of said active component in said passive component, varying

the temperature of said passive component, and tailoring a geometry of said passive component.

34. The method as recited in claim 27, wherein said introducing said inactive component comprises introducing an embedded active component within said passive component.

35. The method as recited in claim 27, wherein said introducing said active component comprises introducing at least one of a solid material, and a liquid material.

36. The method as recited in claim 27, wherein said introducing said active component comprises introducing comprises at least one of an organo-metallic compound, an ultraviolet absorber, and an antioxidant.

37. The method as recited in claim 27, wherein said introducing said active component comprises introducing a distribution of solid particles encapsulated within said passive component.

38. The method as recited in claim 27, wherein said passive component comprising at least one of a polymer, a porous polymer, an exposing comprises eroding said foam, and a gel.

39. A processing element for affecting a chemical process in a semiconductor manufacturing system, comprising:

means for containing an active component within said semiconductor manufacturing system but initially isolated from said chemical process; and

means for releasing said active component from said means for containing after a period of exposure of said means for containing to said chemical process in said semiconductor manufacturing system; and

an active component coupled to said passive component and configured to alter said chemical process when exposed to said chemical process.